Washington State Energy Strategy Update

Energy Information and Data

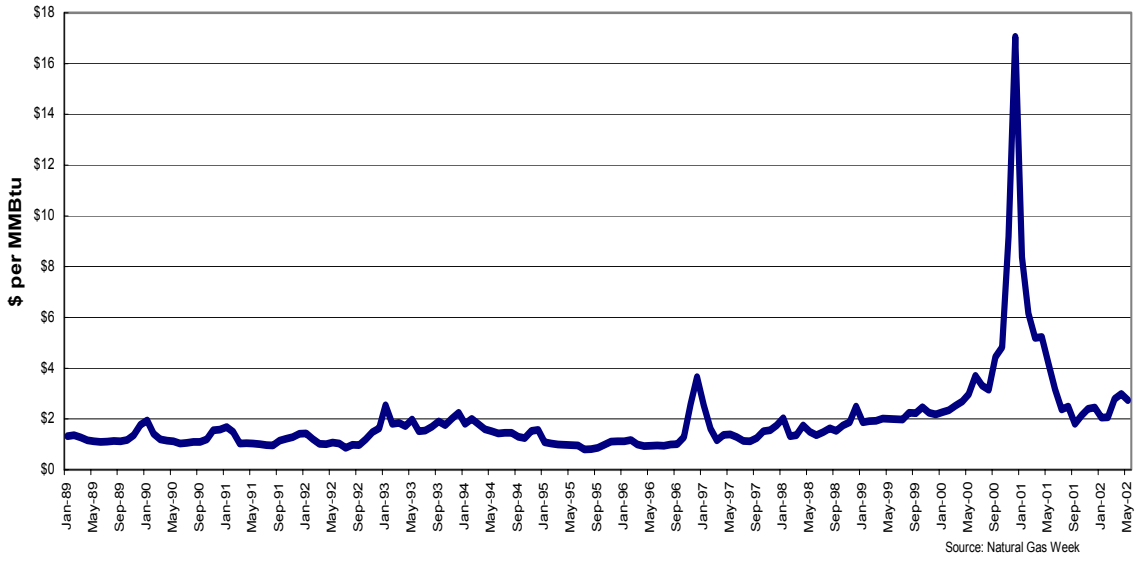
The energy information and data contained in this document begins to collect in one place the information needed to support the Washington State Energy Strategy Update. The information responds to questions from the members of the Energy Strategy Advisory Committee and to questions raised in a report produced in Spring 2001*, Q & A Concerning Impacts of Current Energy Situation on Washington States Economy* (available at website). This is a working document. In some cases, the data presented here raises new questions that we are looking into. We continue to seek answers to some questions that have been raised by committee members. Your feedback on the information presented in this document and help in prioritizing our activities is welcome.

The information is presented in a question and answer format. Each question is followed by a brief explanation, figures or tables responding to the question (Indicators), and additional questions we are considering.

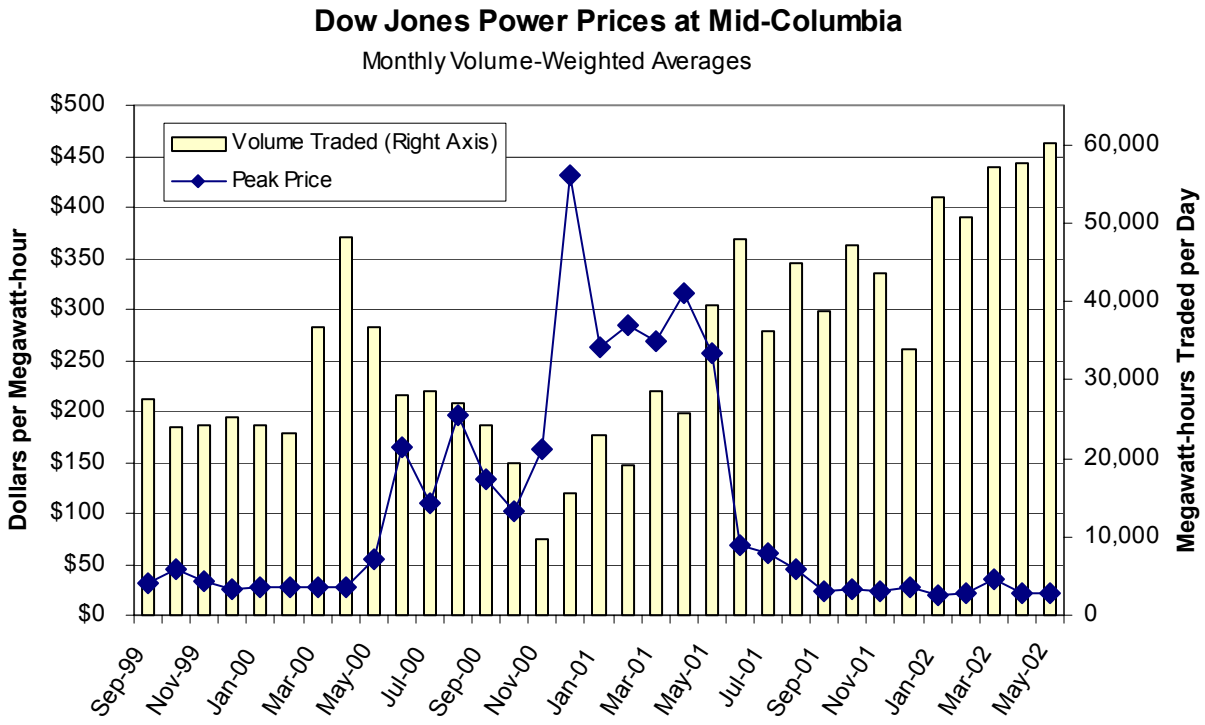
1. **What happened to *wholesale* energy prices in Washington?**
   Wholesale energy prices increased significantly during the energy crisis, but have returned to pre-crisis levels. Note that spot markets are only a portion of the total energy market.

   Indicators: Historical wholesale natural gas prices at Sumas; Wholesale electricity prices at mid-Columbia hub (volume-weighted averages and daily on-peak values); Washington electricity consumption compared to mid-C volumes

Monthly Average Natural Gas Spot Price
Delivered to Pipeline at Sumas, WA



Source: Natural Gas Week


Dow Jones Power Prices at Mid-Columbia
Monthly Volume-Weighted Averages
Volume Traded (Right Axis)
Peak Price
Dollars per Megawatt-hour
Megawatt-hours Traded per Day
$500
$450
$400
$350
$300
$250
$200
$150
$100
$50
$0
60,000
50,000
40,000
30,000
20,000
10,000
0
Sep-99
Nov-99
Jan-00
Mar-00
May-00
Jul-00
Sep-00
Nov-00
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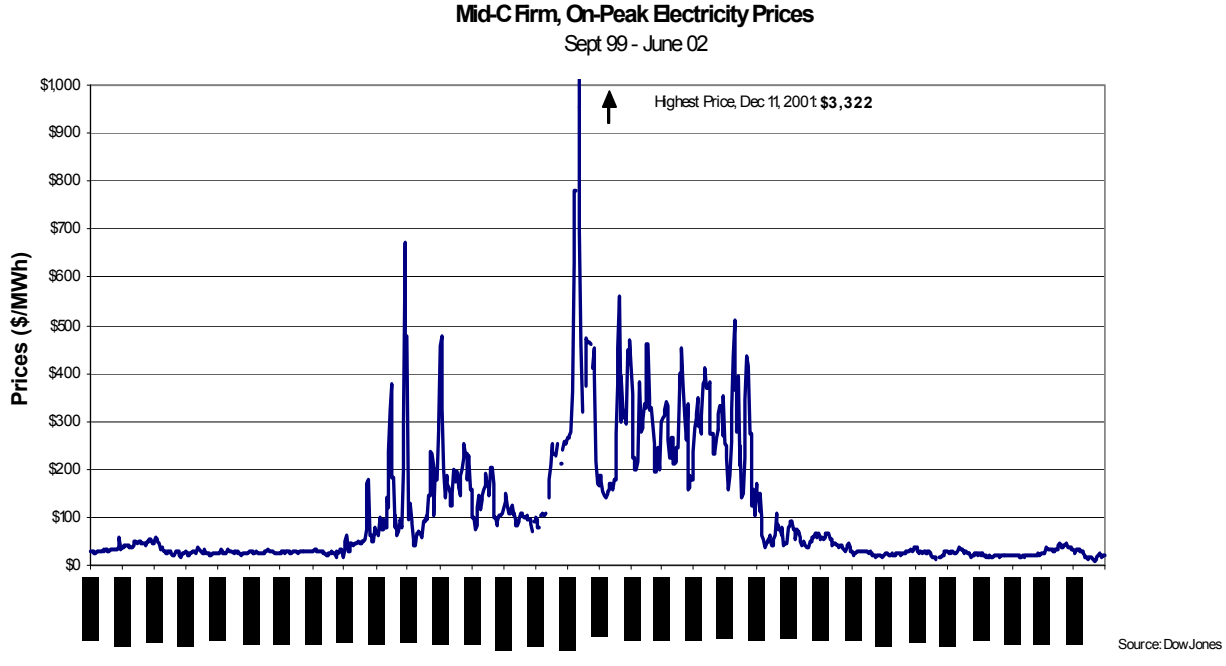
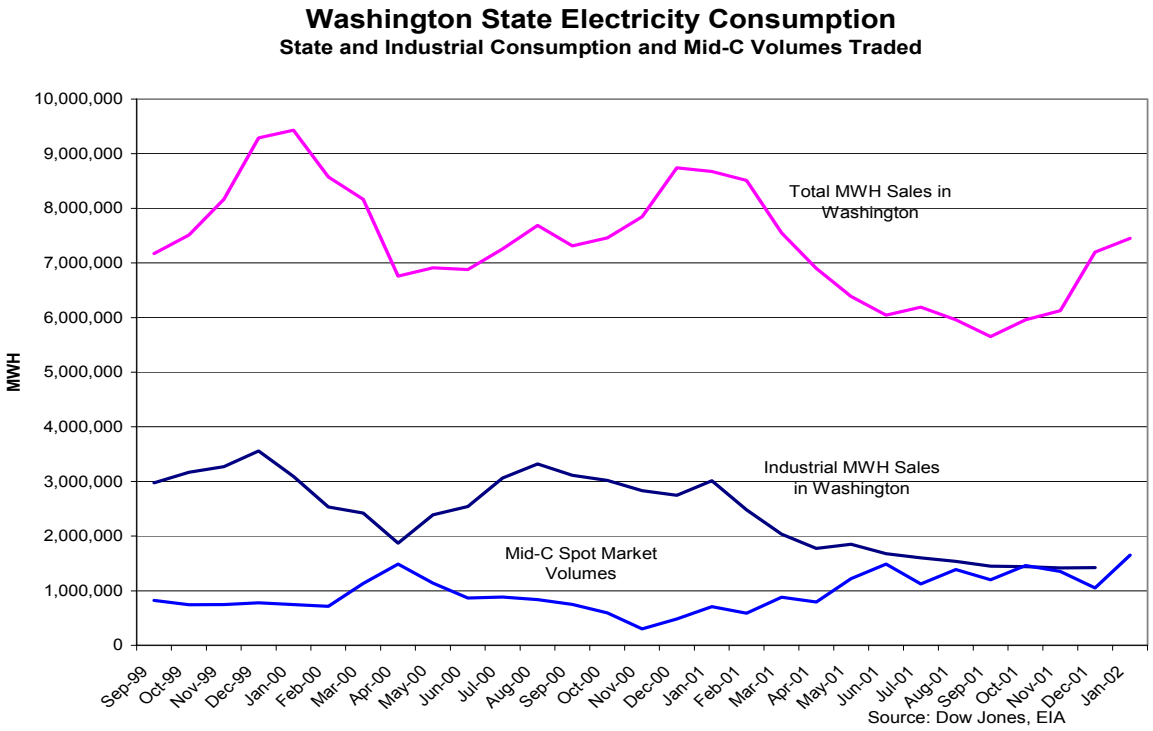
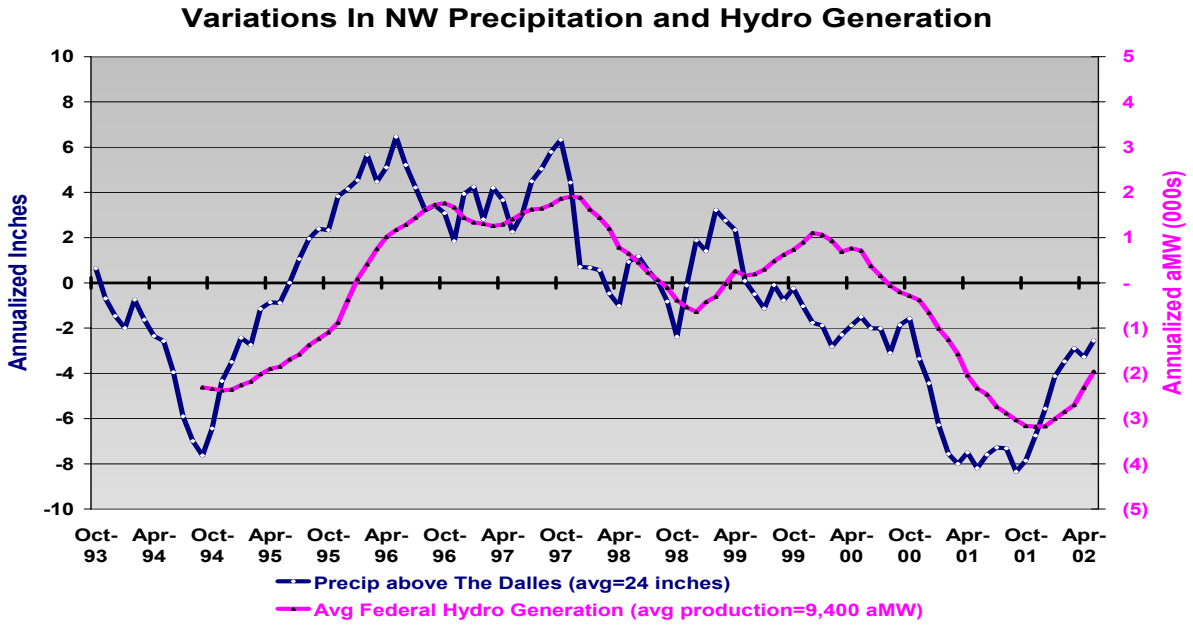
Mar-02
May-02


Mid-C Firm, On-Peak Electricity Prices
Sept 99 - June 02
Highest Price, Dec 11, 2001: $3,322
Prices ($/MWh)
$1,000
$900
$800
$700
$600
$500
$400
$300
$200
$100
$0
Source: Dow Jones



Remaining Questions: How much of state natural gas sales are made on the spot market versus long-term contract? What is the historical pre-crisis electricity spot market price?

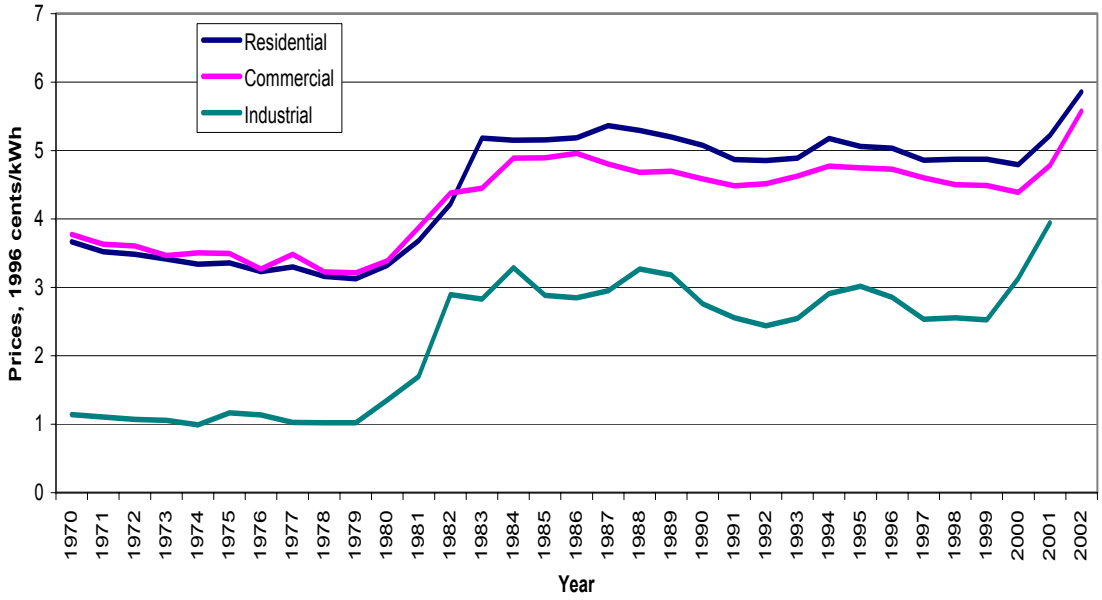
2. **What was the impact of the drought on electricity supply?**
Hydro generation capacity dropped significantly due to the drought.
Indicator: Variation in Federal Columbia River Power System (RCRPS) hydroelectric production relative to precipitation above The Dalles.



3. **How have retail natural gas and electricity rates in Washington changed as a result of the west coast energy crisis?**
   Retail natural gas and electricity rates have increased.

   Indicator: Electricity and natural gas price trends by sector. (Note that these data only account for sales to consumers made through retail utilities and BPA. Natural gas prices for 2002 and 2001 (except residential) are not available.)

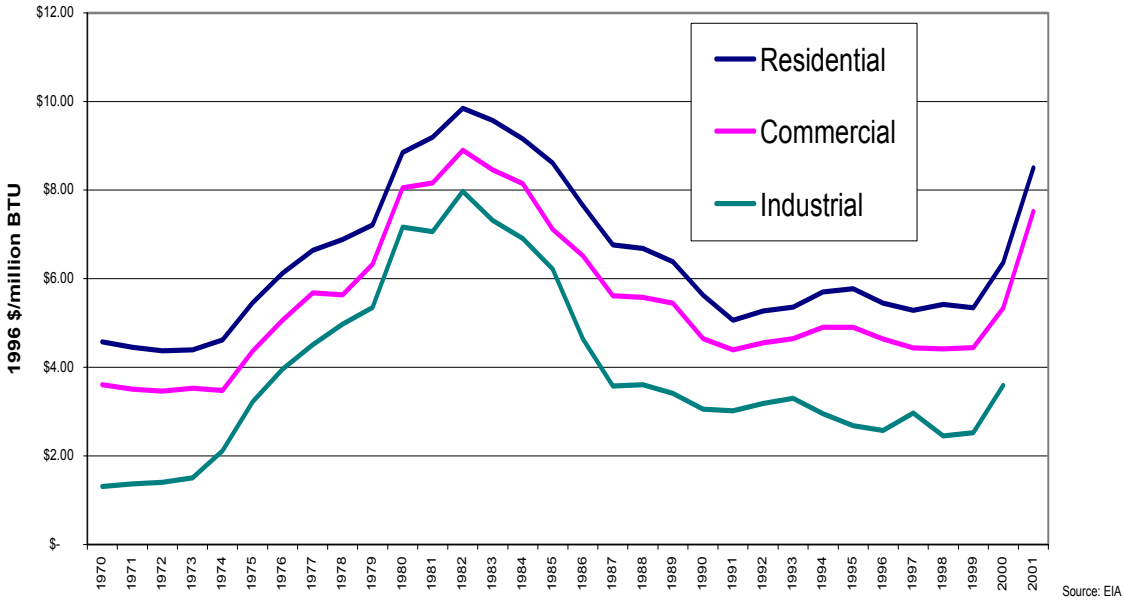
Retail Electricity Prices by Sector, Washington



Source: EIA, BEA

Note: 2002 values are year-to-date through March. The 2002 industrial price is not available

Historical Natural Gas Prices in Washington



Source: EIA

Remaining Questions: Look into unregulated and non-utility electricity sales and explanations for the increase in industrial electricity prices.

4. **How do retail electricity and natural gas rate increases affect Washington's "average" household and commercial business?**
   Average electricity bills have increased around 30% and natural gas bills by over 60%.
   Indicator: Show the change in the average household and business electricity and natural gas bill for 2002/2001 relative to 1999. Note that these estimates assume the same level of consumption in 2001/2002.

Electricity Expenditures		1999		2002 Estimated		Difference
Annual expenditures per residential customer	$	700.06	$	889.08	$	189.02
Monthly expenditures per residential customer	$	58.34	$	74.09	$	15.75
Annual expenditures per commercial customer	$	4,593.69	$	6,063.67	$	1,469.98
Monthly expenditures per commercial customer	$	382.81	$	505.31	$	122.50

Natural Gas Expenditures		1999		2001 Estimated		Difference
Annual expenditures per residential customer	$	541.13	$	898.28	$	357.15
Monthly expenditures per residential customer	$	45.09	$	74.86	$	29.76
Annual expenditures per commercial customer	$	3,063.15		na		na
Monthly expenditures per commercial customer	$	255.26		na		na

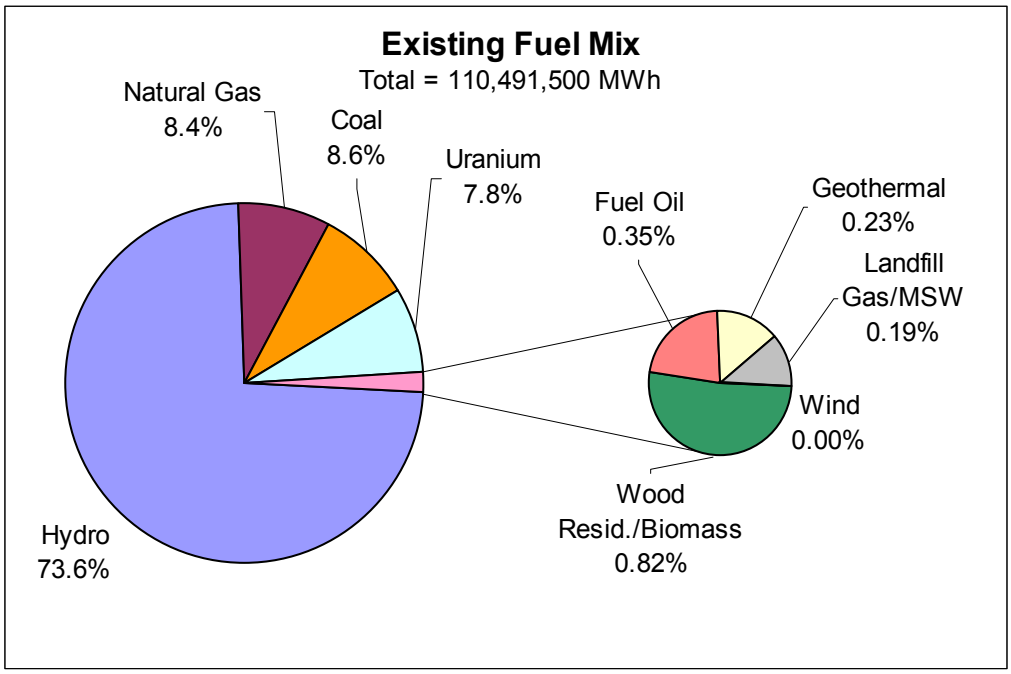
Remaining Question: Update data on indicators for residential and commercial consumption and expenditures to 2001.

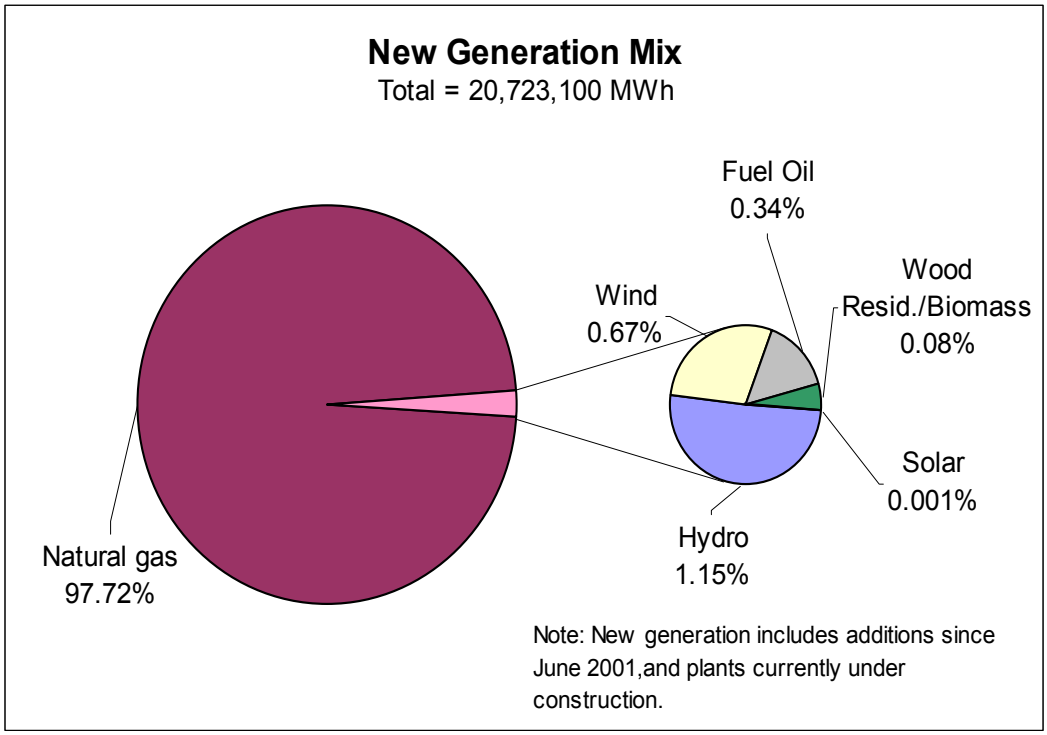
5. **As a result of the west coast energy crisis, how do energy prices in Washington compare to other states?**
   Washington's relative ranking has declined and it is no longer the low cost state for electricity.
   Indicator: Compare retail electricity and natural gas rates in Washington relative to other states by sector for the last several years. The values in the table are rankings relative to other states. Natural gas prices are not available (na) for 2002 and for the industrial and commercial sectors in 2001.

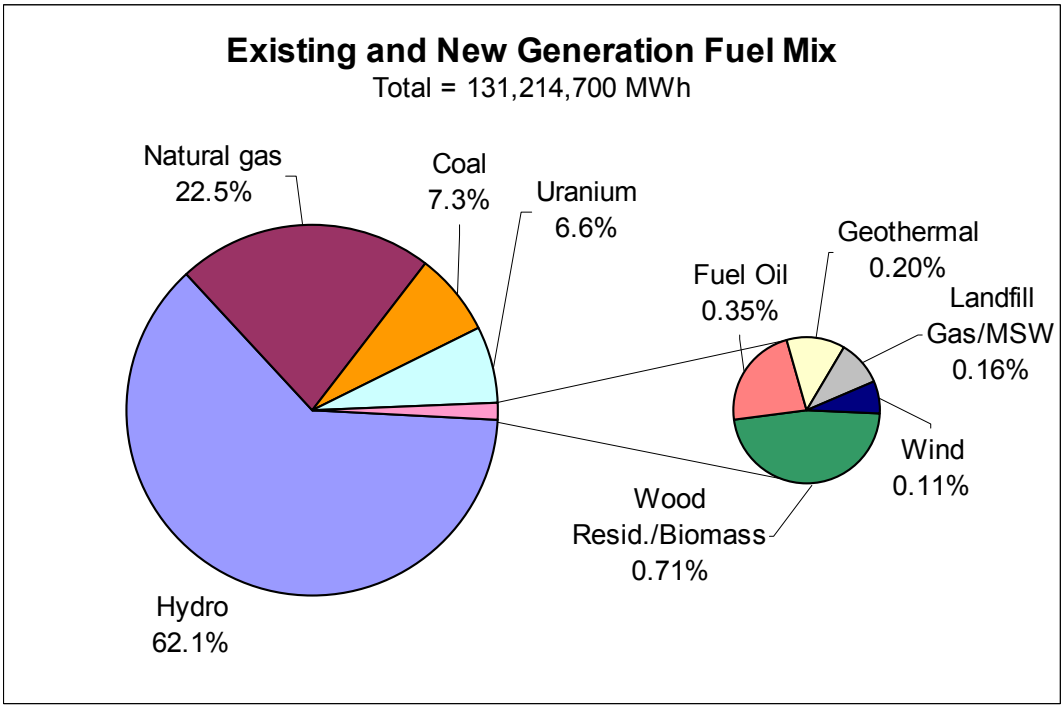
Washington State Ranking	(50=lowest; 1=highest)	red = estimate		
Electricity Prices				
	YTD 2002	**2001**	**2000**	**1999**
Residential	41	49	50	50
Commercial	32	47	49	49
Industrial	na	34	45	50
Natural Gas Prices				
	YTD 2002	**2001**	**2000**	**1999**
Residential	na	26	37	35
Commercial	na	na	34	33
Industrial	na	na	42	46

6. **How does new generation influence the diversity of generation in the state?** Washington's generation mix is dominated by hydroelectric production, but new generation is predominately fueled by natural gas.

   Indicator: Show the mix of new generation in Washington State along with current generation. Combine the two to show the mix of current generation with new generation. Note: Existing fuel mix is based on actual generation in 2000 from Washington's fuel disclosure database. New generation mix is based on additions since June 2001 and plants currently under construction using estimated capacity factors.



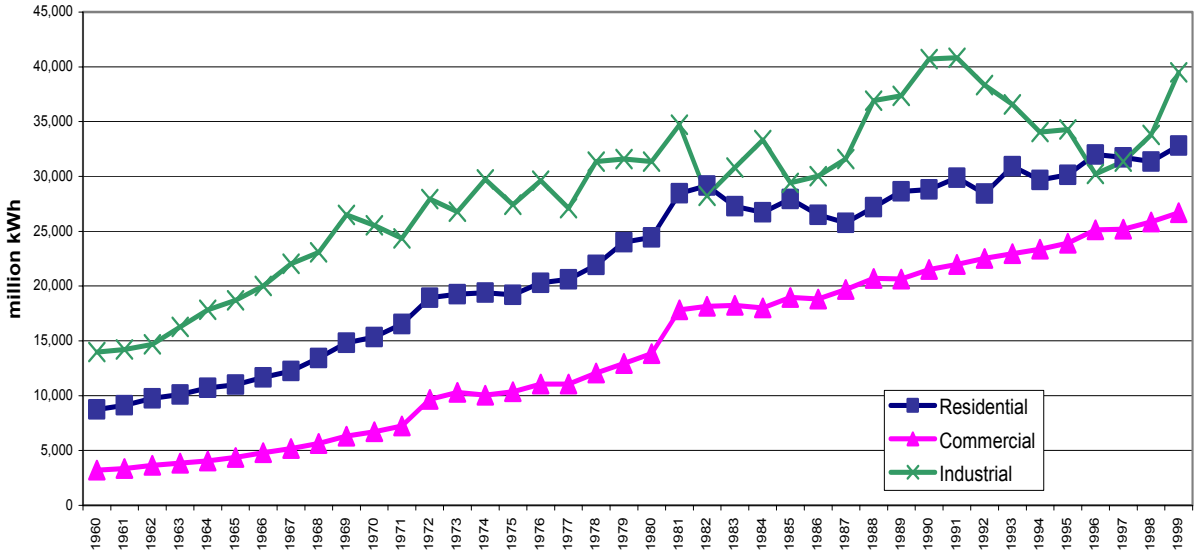




7. **Where is growth occurring in electricity consumption in the state?**
Historically electricity use has been growing, but recently industrial use has declined and residential and commercial use is flat.

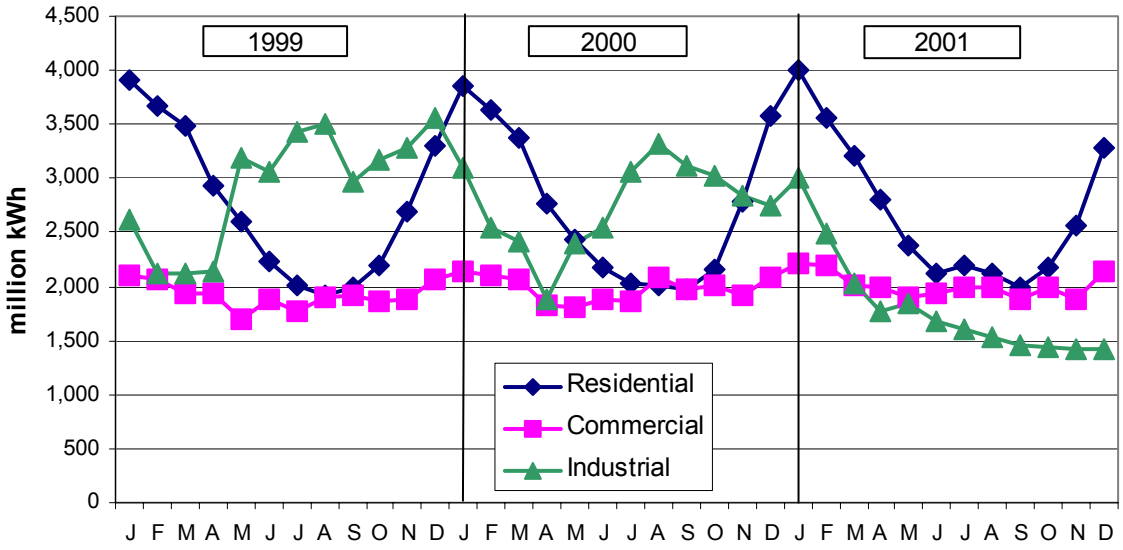
Indicator: Show electricity consumption trends by sector.

Washington State Historical Electricity Consumption by Sector



Source: EIA

Washington State Electricity Retail Sales by Sector

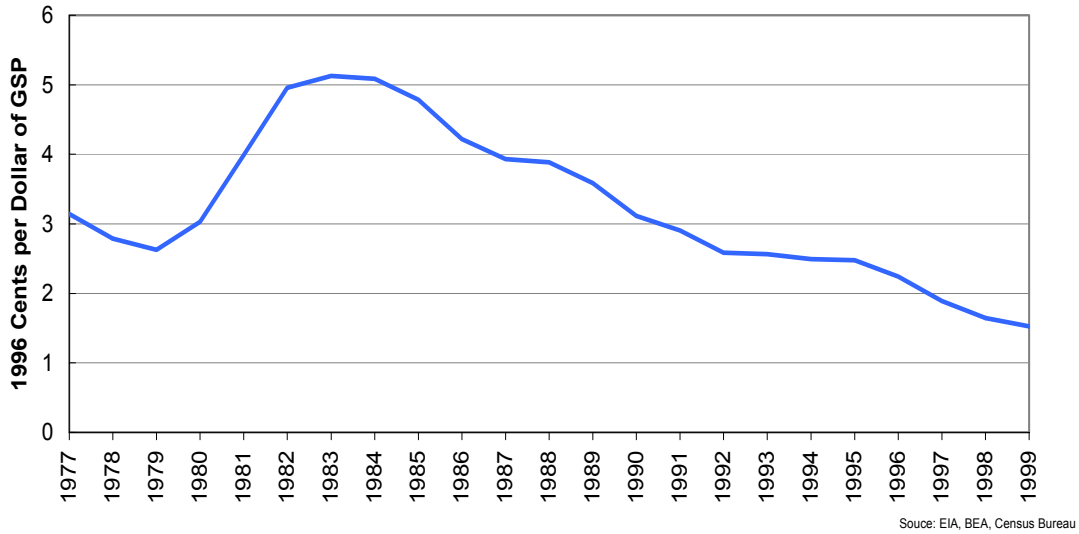


Remaining Questions: These data include only retail electricity sales. Check unregulated or non-utility sales (particularly for industrial electricity sales). Also consider the extent to which recent declines in consumption will continue.

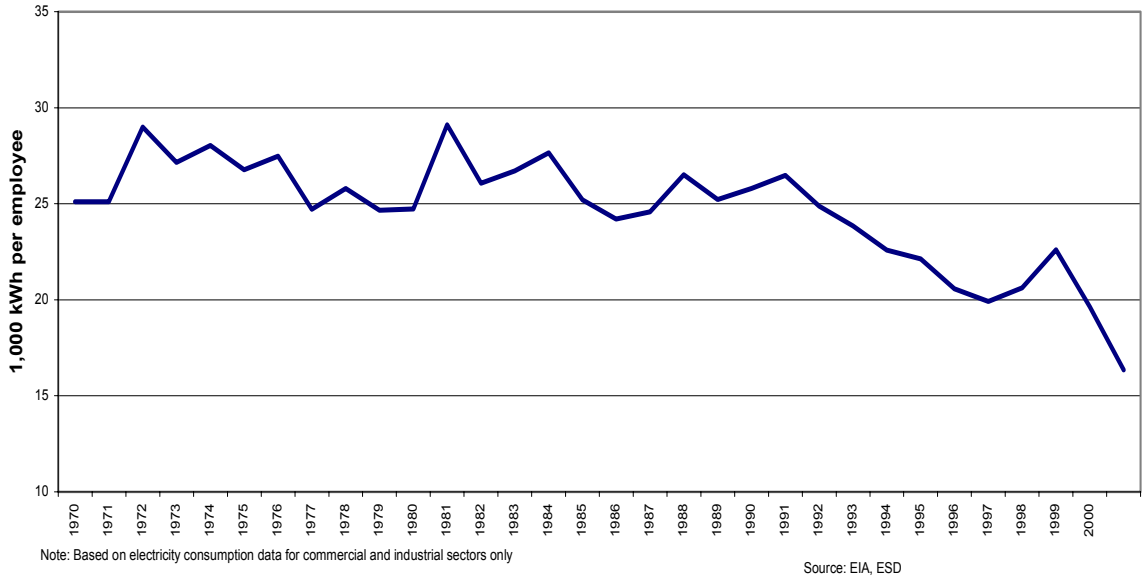
8. **How does growth in electricity consumption and expenditures relate to other economic indicators?**
   Historically, electricity expenditures and consumption have been declining relative to gross state product and employment.

   Indicator: Show electricity expenditures per gross state product and commercial and industrial electricity use per employee over time.

Electricity Expenditures per Dollar of WA Gross State Product



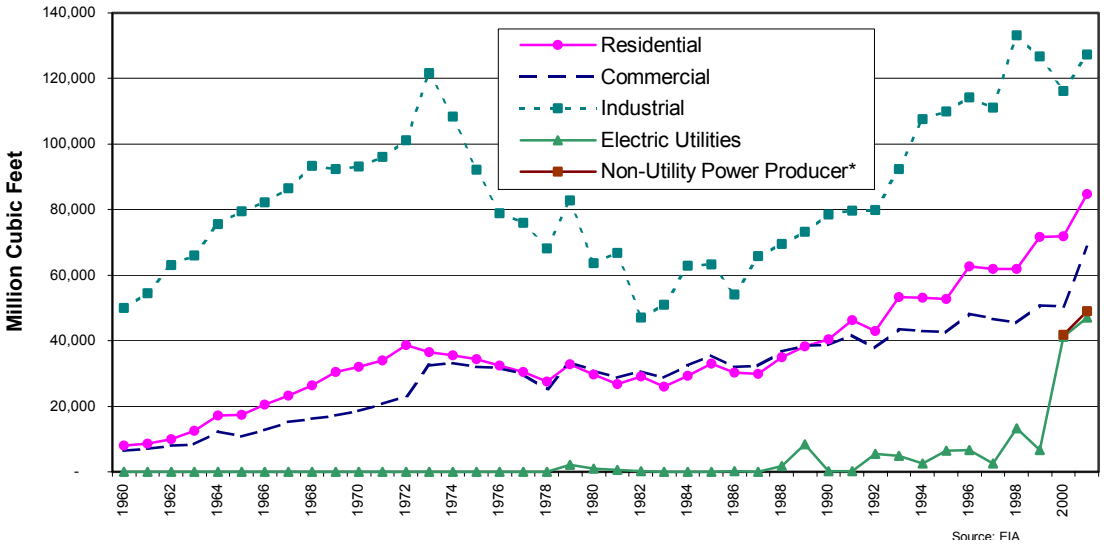
Energy Intensity Indicator:
Electricity Consumption and Employment



9. **Where is growth occurring in natural gas consumption in the state? Is there any evidence of increasing consumption for electricity generation?**
   Total natural gas consumption has more than doubled since the early 1980's.

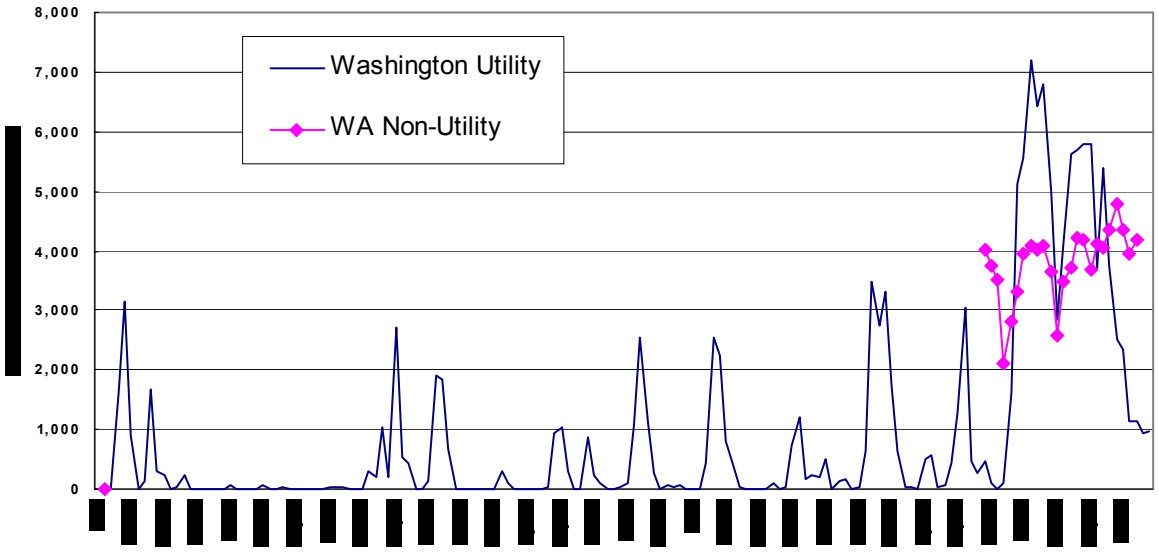
   Indicator: Show natural gas consumption trends by sector including for generation.

Historical Natural Gas Consumption



*Note: Data for non-utility generators is only available for 2000 and 2001.

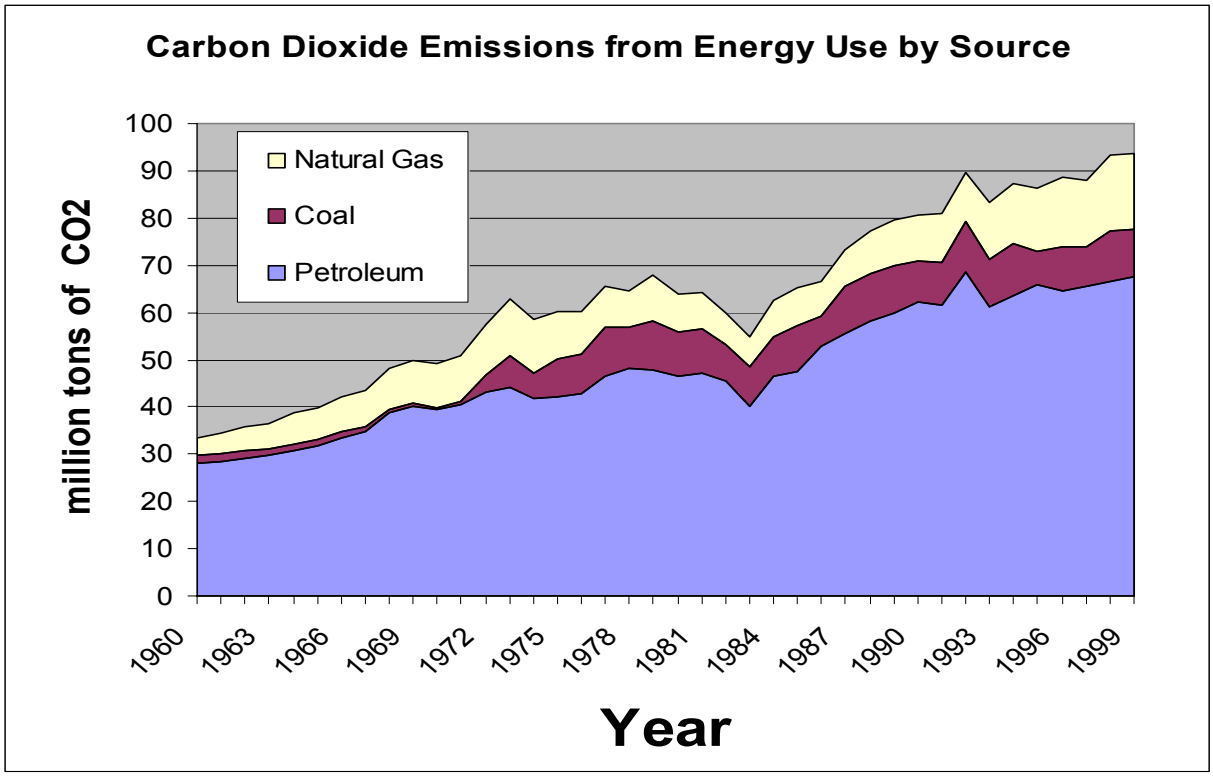
Natural Gas Deliveries to Electric Power Generators in Washington



*Note: Data for non-utility generators is only available for 2000 and 2001.

10. **What is the impact of energy consumption in Washington on the production of greenhouse gases?**
    Emissions from the consumption of petroleum products (primarily for transportation) are the major contributor to greenhouse gases in Washington.

    Indicator: Show greenhouse gas emission trends by fuel source.

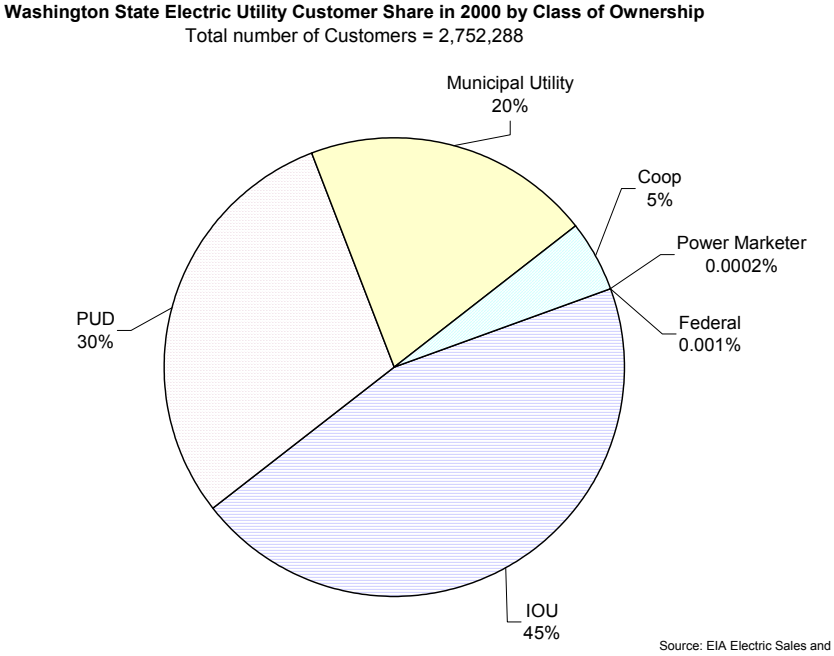


Remaining Question: Update the data with 2000 and 2001 values.

11. What is the mix of utility types in Washington?

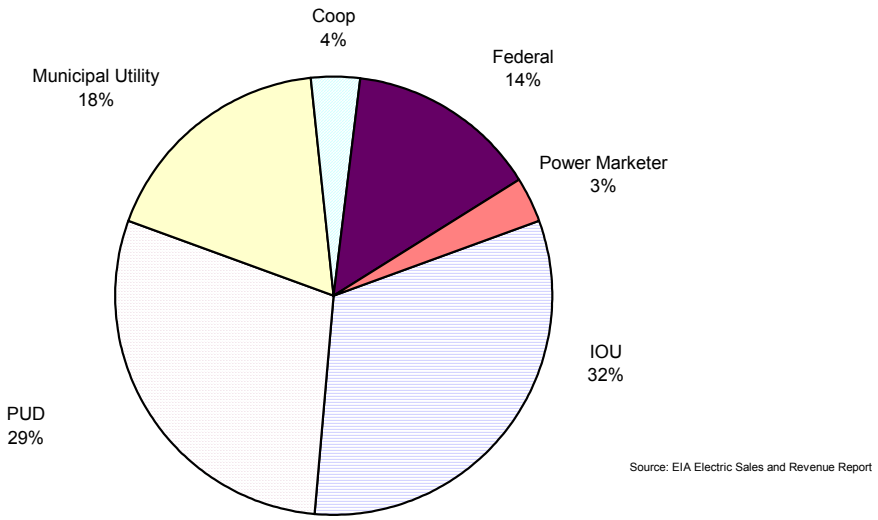
Publicly-owned utilities make up a significant share of Washington's electric utilities.

Indicator: Show the mix of utilities by kWh sales and customers.



Washington State Electricicty Sales and Average Price in 2000 by Class of Ownership

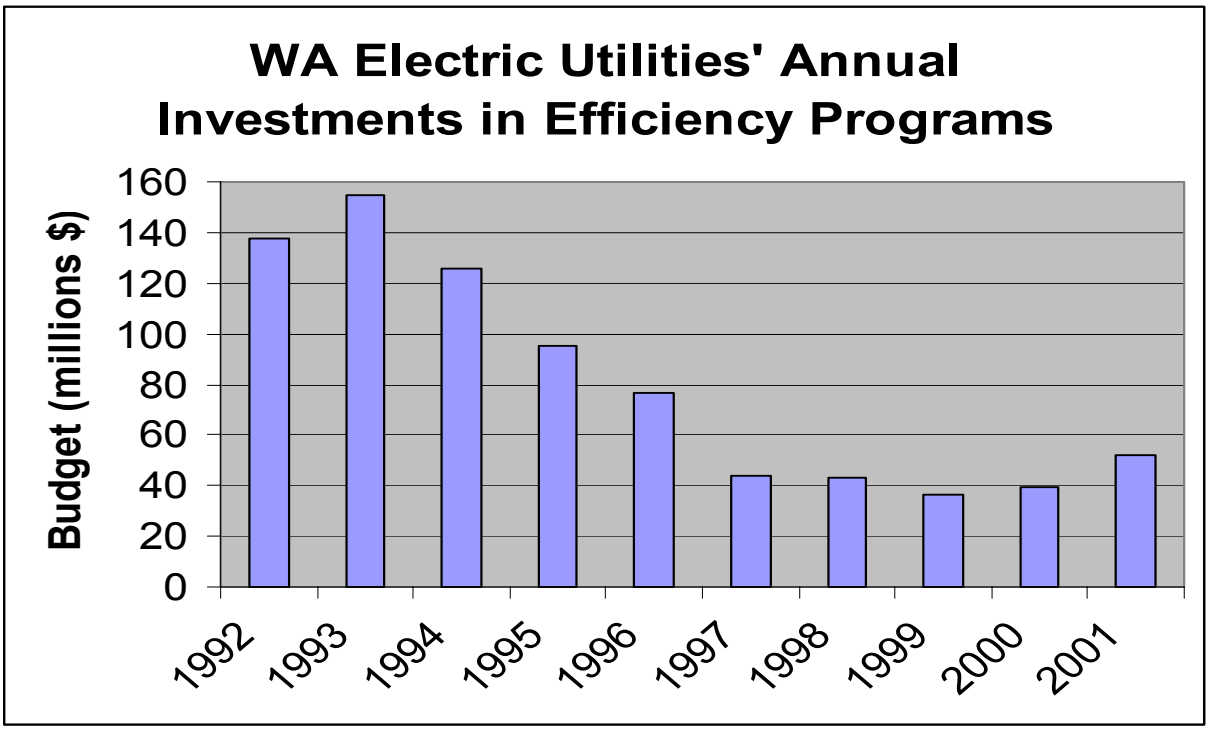
Total MWh Sales = 96,511,121



12. What is the level of investment in energy conservation in Washington?

The level of conservation investment in Washington has declined since the early 1990's, but is beginning to rise again.

Indicator: The trend in Washington utilities' investments in energy efficiency programs.



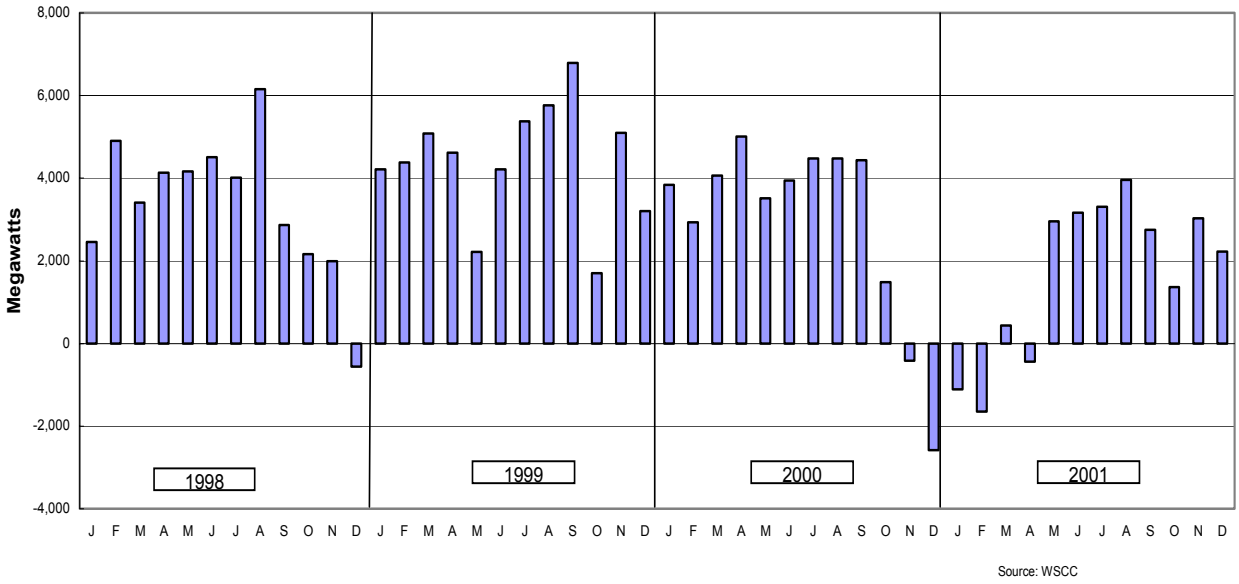
Remaining Questions: What are the conservation savings values by state? What portion of this savings is due to contributions from BPA? What percentage of conservation spending comes from building users and what percent from utilities or other sources?

13. What is the electricity flow into and out of the region?

The Northwest Power Pool is a net exporter of power during much of the year, although this changed in early 2001.

Indicator: Net firm transfers of power for 2001 for the Northwest Power Pool U.S. System. Note: exports are positive and imports are negative.

NW Power Pool Net Firm Transfers 1998-2001



Source: WSCC

Other topics and questions to be considered:

- More detailed electricity rate information at the utility level
- Information on the effects of the energy crisis on Washington utilities (e.g. access to capital, changes in utility bond ratings; dividends/stock value for IOUs)
- Information on the adequacy of the supply-demand balance and availability of resources to meet load growth
- Projected capital spending needs in the state for building transmission lines, and acquiring cost-effective conservation and renewable resources, etc.